

Application No. 10/567,502

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REMARKS/ARGUMENTS

Claims 11, 12, 14-18, and 20 are pending in this application. By this Amendment, Applicant AMENDS Claims 11, 14, 17, and 20 and CANCELS Claims 13 and 19.

In response to the Notice of Non-Compliant Amendment dated October 21, 2008, Applicant has changed the status identifier for Claim 17 from "previously presented" to "currently amended" to identify the claims as being amended in this Amendment. Otherwise, this Amendment is substantially the same as the Amendment previously filed on September 22, 2008.

Applicant's counsel greatly appreciates the courtesies extended by the Examiner in the Personal Interview of July 18, 2008. The Examiner and Applicant's counsel discussed the prior art references and possible amendments to overcome the outstanding prior art rejections. The Examiner and Applicant's counsel also discussed the questions presented in the Examiner's 35 U.S.C. § 112 rejections. The Examiner agreed that the below discussed answers to the Examiner's questions overcame the 35 U.S.C. § 112 rejections.

Applicant has amended the legend of Table 4 on page 32 of Applicant's Specification. During the Personal Interview of July 18, 2008, the Examiner requested that specific support be provided for this amendment. Table 4 and the legend for Table 4 on page 32 of the Substitute Specification provide support for this amendment. The legend states, "* means that accumulated phases of B and Zr coexisted." In Table 4, "*" only appears in rows in which both B and Zr have "o." Thus, "o" must mean that the accumulated phase was identified, and "x" must mean that no accumulated phase was identified. Thus, Applicant's Substitute Specification supports the amendments of " \ominus x means that no accumulated phase was identified" and " \times o means that an accumulated phase was identified."

On page 2 of the outstanding Office Action, the Examiner rejected Claims 11-20 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite.

In Section No. 5(I) bridging pages 2 and 3 of the outstanding Office Action, with respect to the feature of "0.85 mass% through 0.98 mass% of Q, which is either B alone or a mixture of

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B and C and which is converted into B on a number of atoms basis when its mass percentage is calculated" recited in Applicant's Claim 11, the Examiner asked, "Does this mean that in converting [from] atom % to weight % C atoms are treated as if they are B, that is, using the molecular weight of B in the conversion?"

Yes, in determining the mass% of Q when C is present, the atomic weight of B is used.

In Section No. 5(II) on page 3 of the Office Action, with respect to the feature of "substantially no accumulated phases of Q" as recited in Claims 12 and 18, the Examiner asked, "Does this mean that there are no carbides or borides in the claimed magnet?"

A "Q accumulated phase" is a phase containing more Q than $R_2Fe_{14}B$ compound phase (i.e., main phase). Examples of the Q accumulated phase are $R_{1.1}Fe_4B_4$ phase ([0040]), ZrB_2 , Zr-Nd-B and Zr-Fe-B ([0086]). Paragraph no. [0041] of Applicant's Substitute Specification states:

As used herein, if the magnet "includes substantially no B-rich phases", it means that when randomly picked 10 or more portions of the magnet are observed with an EPMA, no Q accumulated structure is identified in 90% or more of those portions. Also, if "no Q accumulated phase is identified", then the total area of a portion where bright spots are concentrated (i.e., a portion attributed to an accumulated phase) is less than 5% of the overall vision of $100\ \mu m \times 100\ \mu m$ when the fluorescence x-rays (B-K α) of born (B) are observed with an EPMA (e.g., EPM1610 produced by Shimadzu Corporation) under the conditions including an acceleration voltage of 15 kV, a beam diameter of $1\ \mu m$, a current value of 30 nA (measured with a Faraday cup) and spectral crystals of LSA200.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 11-20 under 35 U.S.C. § 112, second paragraph.

On page 3 of the outstanding Office Action, the Examiner rejected Claims 11-20 under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. (U.S. 2002/0007875), JP 2002-075717, or Nishizawa et al. (U.S. 2004/0177899).

Applicant respectfully traverses the rejections of Claims 11-20.

Applicant's Claim 1 recites:

A rare-earth sintered magnet, a main phase of which includes an $R_2T_{14}B$ type compound phase, the magnet comprising:

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27 mass% through 32 mass% of R, which is at least one rare-earth element that is selected from the group consisting of Nd, Pr, Tb, and Dy and that always includes at least one of Nd and Pr;

60 mass% through 73 mass% of T, which is either Fe alone or a mixture of Fe and Co;

0.85 mass% through 0.98 mass% of Q, which is either B alone or a mixture of B and C and which is converted into B on a number of atoms basis when its mass percentage is calculated;

more than 0 mass% through 0.3 mass% of Zr;

at most 2.0 mass% of an additive element M, which is at least one element selected from the group consisting of Al, Cu, Ga, In and Sn; and inevitably contained impurities; wherein

the additive element includes Ga, which accounts for 0.01 mass% through 0.08 mass% of the magnet. (emphasis added)

In Section No. 7 on pages 3-5 of the Office Action, the Examiner alleged that each of the references, Yamamoto et al., JP 2002-075717, and Nishizawa et al., disclose alloys having ranges overlapping the claimed ranges, that it would have been obvious for one of ordinary skill in the art select the overlapping disclosed ranges, and that one of ordinary skill in the art would expect that the disclosed alloys to have the same properties because of the closeness of the ranges in the prior art to the claimed ranges.

Applicant has amended Claims 11 and 17 to recite the feature of “the additive element includes Ga, which accounts for 0.01 mass% through 0.08 mass% of the magnet,” which was originally recited in now canceled Claims 13 and 17.

First, as noted by the Examiner on the Interview Summary (Form PTOL-413), Yamamoto et al. is the U.S. equivalent of JP 2002-075717. For the sake of clarity and convenience, Applicant only specifically addresses Yamamoto et al. However, the arguments concerning Yamamoto et al. are equally applicable to JP 2002-075717.

Second, as discussed during the Personal Interview of July 18, 2008, Yamamoto et al. mentions gallium (Ga) once. Paragraph no. [0053] on page 4 of Yamamoto et al. states in full:

The copper and the zirconium, niobium or hafnium used in the invention may be used as alloys or admixtures with the iron or aluminum employed as starting materials. The additional presence of a small amount of **up to 0.2 wt %**

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of lanthanum, cerium, samarium, nickel, manganese, silicon, calcium, magnesium, sulfur, phosphorus, tungsten, molybdenum, tantalum, chromium, **gallium** and titanium already present in the starting materials or admixed during the production processes does not compromise the effects of the invention. (emphasis added)

Yamamoto et al. neither anticipates or renders obvious the feature of “the additive element includes Ga, which accounts for 0.01 mass% through 0.08 mass% of the magnet” as recited in Applicant’s Claims 11 and 17.

Yamamoto et al.’s single mention of gallium fails to be with sufficient specificity to be anticipatory for the narrowly claimed feature of “the additive element includes Ga, which accounts for 0.01 mass% through 0.08 mass% of the magnet” recited in Applicant’s Claims 11 and 17. MPEP § 2131.03(II) states:

When the prior art discloses a range which touches or overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with “sufficient specificity to constitute an anticipation under the statute.” What constitutes a “sufficient specificity” is fact dependent. If the claims are directed to a narrow range, and the reference teaches a broad range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with “sufficient specificity” to constitute an anticipation of the claims. See, e.g., *Atofina v. Great Lakes Chem. Corp*, 441 F.3d 991, 999, 78 USPQ2d 1417, 1423 (Fed. Cir. 2006) wherein the court held that a reference temperature range of 100-500 degrees C did not describe the claimed range of 330-450 degrees C with sufficient specificity to be anticipatory. Further, while there was a slight overlap between the reference's preferred range (150-350 degrees C) and the claimed range, that overlap was not sufficient for anticipation. “[T]he disclosure of a range is no more a disclosure of the end points of the range than it is each of the intermediate points.” *Id.* at 1000, 78 USPQ2d at 1424. Any evidence of unexpected results within the narrow range may also render the claims unobvious. The question of “sufficient specificity” is similar to that of “clearly envisaging” a species from a generic teaching. See MPEP § 2131.02. A 35 U.S.C. 102/103 combination rejection is permitted if it is unclear if the reference teaches the range with “sufficient specificity.” The examiner must, in this case, provide reasons for anticipation as well as a
*>reasoned< statement regarding obviousness. *Ex parte Lee*, 31 USPQ2d 1105

(Bd. Pat. App. & Inter. 1993) (expanded Board). For a discussion of the obviousness of ranges see MPEP § 2144.05.

Just as a teaching of 100-500 °C did not describe the claimed range of 330-450 °C with sufficient specificity to be anticipatory in *Autofina*, Yamamoto et al.'s teaching of "up to 0.2 wt % of ... gallium" fails to be anticipatory for "0.01 mass% through 0.08 mass%" of gallium as recited in Applicant's Claim 11 and 17.

Further, Yamamoto et al. fails to render Applicant's Claims 11 and 17 obviousness because of the unexpected property achieved by the rare-earth sintered magnet recited in Applicant's Claims 11 and 17. The first paragraph MPEP § 716.02(a)(III) states:

Presence of a property not possessed by the prior art is evidence of nonobviousness. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (rejection of claims to compound structurally similar to the prior art compound was reversed because claimed compound unexpectedly possessed anti-inflammatory properties not possessed by the prior art compound); *Ex parte Thumm*, 132 USPQ 66 (Bd. App. 1961) (Appellant showed that the claimed range of ethylene diamine was effective for the purpose of producing "regenerated cellulose consisting substantially entirely of skin" whereas the prior art warned "this compound has 'practically no effect.'"). The submission of evidence that a new product possesses unexpected properties does not necessarily require a conclusion that the claimed invention is nonobvious. *In re Payne*, 606 F.2d 303, 203 USPQ 245 (CCPA 1979). See the discussion of latent properties and additional advantages in MPEP § 2145.

Applicant has provided a Declaration under 37 CFR § 1.132 declaring that the addition of Ga in the amount of "0.01 mass% through 0.08 mass% of the magnet" to a rare earth sintered magnet, where the rare earth sintered magnet includes "0.85 mass% through 0.98 mass% of Q, which is either B alone or a mixture of B and C and which is converted into B on a number of atoms basis when its mass percentage is calculated," as recited in the present claimed invention, achieved the unexpected property of the minimization of the production of the soft magnetic phase. This unexpected property is also discussed in paragraph nos. [0044], [0045], [0087], and [0088] of Applicant's Substitute Specification.

Yamamoto et al. clearly fails to appreciate the unexpected property achieved by the presence of gallium as recited in Applicant's Claims 11 and 17. As seen in the above quoted paragraph no. [0053] of Yamamoto et al., Yamamoto et al. treats gallium as an equivalent to a long list of possible elemental impurities or additives and fails to particularly discuss any property achieved by Ga, including the property of the minimization of the production of the soft magnetic phase achieved by the present claimed invention.

Thus, Yamamoto et al. neither anticipates nor renders obvious Applicant's Claims 11 and 17.

As noted above, each of Applicant's above-discussed arguments concerning Yamamoto et al. is equally applicable to JP 2002-075717.

Third, Nishizawa et al. fails to mention or suggest Ga or gallium. Thus, Nishizawa et al. fails to teach or suggest the feature of "the additive element includes Ga, which accounts for 0.01 mass% through 0.08 mass% of the magnet" as recited in Applicant's Claims 11 and 17.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 11 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al., JP 2002-075717, or Nishizawa et al.

Accordingly, Applicant respectfully submits that the prior art of record, applied alone or in combination, fails to teach or suggest the unique combination and arrangement of elements recited in Claims 11 and 17 of the present application. Claims 12, 14-16, 18, and 20 depend upon Claims 11 and 17 and are therefore allowable for at least the reasons that Claims 11 and 17 are allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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